

# How We Made the Case for KM at JPL

or

*We Don't Dare Forget How to 'Stick a Landing' on Mars*

## **NASA Knowledge Community F-2-F**

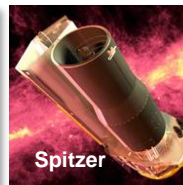
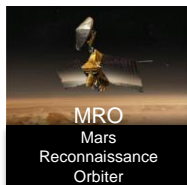
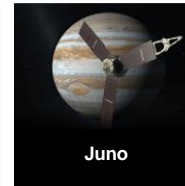
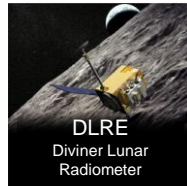
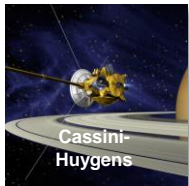
David Oberhettinger, JPL Chief Knowledge Officer (CKO)

July 11, 2017

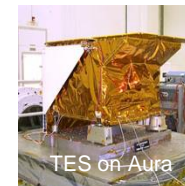
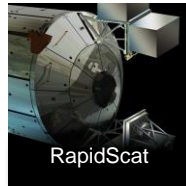
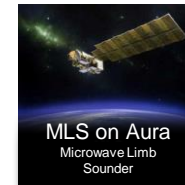
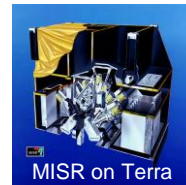
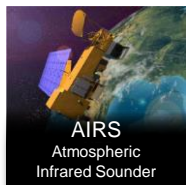


# Current JPL Spaceflight Projects

## Deep Space Missions



## Earth Orbiting Missions

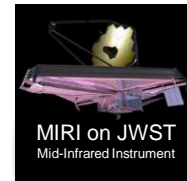
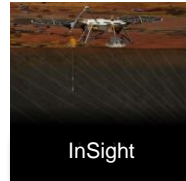




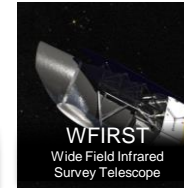
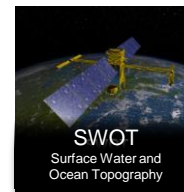
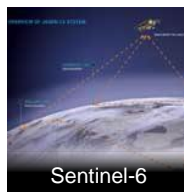
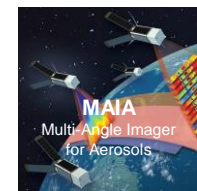
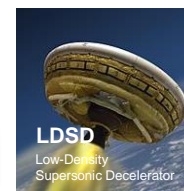
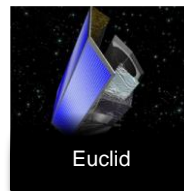
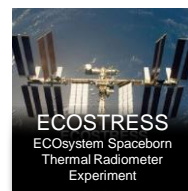
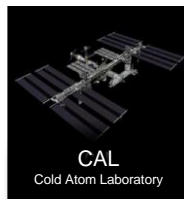


# JPL Spaceflight Projects in Development

## Deep Space Missions



## Earth Orbiting Missions



# How We Made the Case for KM at JPL

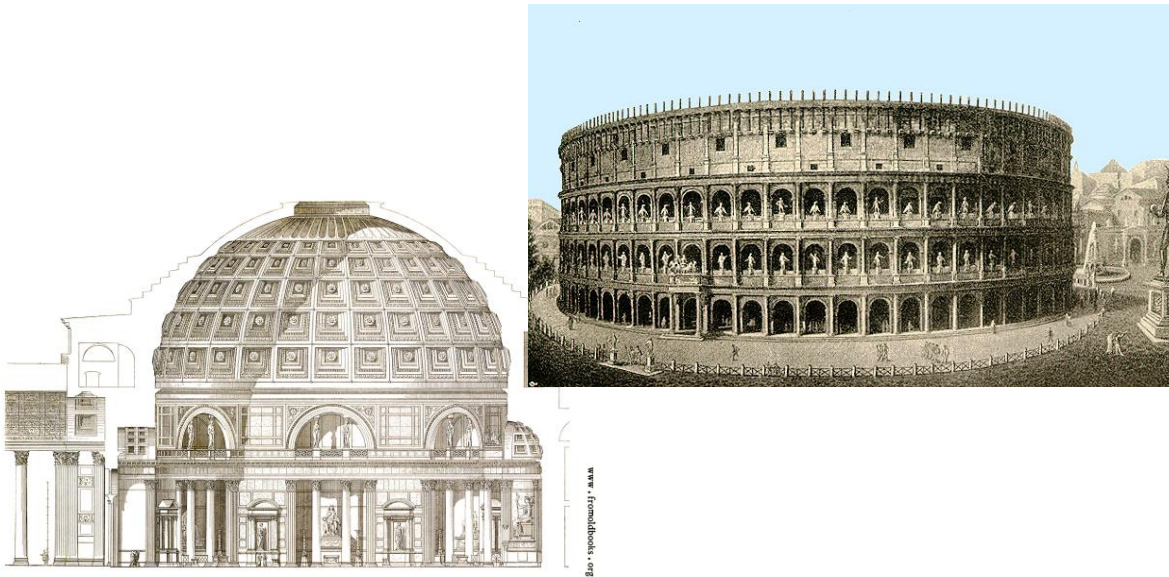


1. Today, corporate investment in intellectual capital may exceed that in physical capital (equipment and facilities)
2. Restoring knowledge that we fail to retain is costly
  - Also risky, because the heritage knowledge had already been proven in ground test and spaceflight
3. Uniquely, JPL can't obtain lost knowledge from elsewhere
  - Who else designs Mars landings, autonomous spacecraft?
4. Critical expertise may be lost due to employee turnover
  - NASA engineers over age 50 outnumber <35 by four to one
5. Value of a “quick win” likely exceeds cost of KM program
6. Because NASA told us to...

# Knowledge Management



- Corporate knowledge is often treated as if it has little value
- Key corporate knowledge may be lost unless leadership supports active measures to capture and retain it



The ancient Romans used pozzolan concrete to build large structures  
--until the technology was lost for 1000 years

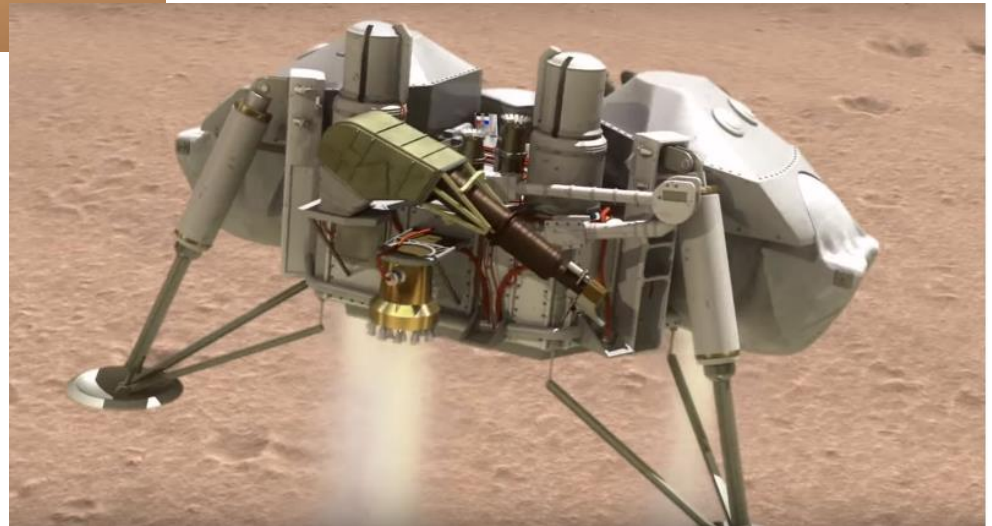
# Lost Knowledge: Throttleable Thrusters



**Mars Science Laboratory:**  
launched in 2011

Hovering “sky crane” ↑ required the recovery of “lost” knowledge that had been used 36 years earlier on →

**Mars Viking:**  
launched in 1975





# Dare Mighty Things

“Far better is it to **dare mighty things**, to win glorious triumphs, even though checked by failure...than to rank with those poor spirits who neither enjoy much nor suffer much, because they live in a gray twilight that knows not victory nor defeat.”

- Theodore Roosevelt, 26th  
President of the United States